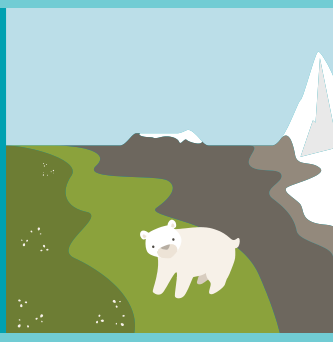
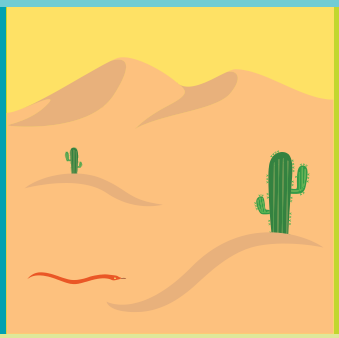
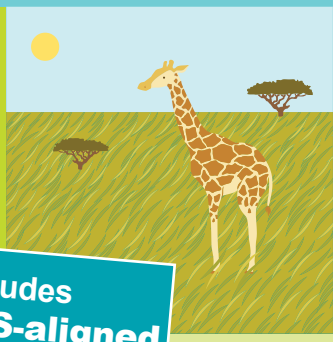
Science Unit for Primary Classrooms





Ecosystems

Includes **10 NGSS-aligned lesson plans** with 40 downloadable posters and other resources!

Engage Every Learner.™

VariQuest®

TABLE OF CONTENTS

JOURNEY THROUGH OUR WORLD'S ECOSYSTEMS

In this 21st Century, we have come to realize more than ever that human activities are having a negative impact on ecosystems, bringing the question to mind, how do we protect ecosystem services for future generations? Educating our youth and creating awareness is a great place to start!

In partnership with The Curriculum Corner, we have comprised a collection of 10 NGSS-aligned lessons, along with a student guide, to help students learn about ecosystems. Students will study what differentiates living from nonliving objects, while exploring the various characteristics of each. In addition, an understanding of the food chain will be developed, and students will build and observe their own ecosystem for deeper cognition.

Unit Overview:

Ecosystems is a science unit that will spark a child's interest in our earth and the ever-present need to protect it. As students explore various ecosystems, a more in-depth study of forest and freshwater environments is provided. The unit provides a write-the-room style assessment for students to review their learning and includes "All About" posters for students to create and share with others. Ecosystems concludes with a day focus on ways the class can work together to have a positive impact on the earth.

As we at VariQuest put a spotlight on kinesthetic and project-based learning, this unit provides hands-on activities and games that will make the discovery of ecosystems more meaningful. Print and assemble the student guide before the start of the unit to capture students' notes, observations, and understanding, as they journey through our world's ecosystems.

About VariQuest®

Across the nation, the VariQuest Suite helps thousands of schools promote differentiated instruction, project-based and blended learning, whole-brain experiences, and real-world skills in the learning styles that are natural to students. Educators and students can create custom posters, banners, manipulatives, bulletin boards, flashcards, recognition plaques, 3D prints, and much more to build a learning environment that promotes student achievement and engagement.

Design Center | Trifecta® 800 | Perfecta® Series | Motiva® 400 | Cutout Maker | Cold Laminator

Click below to download all of the Ecosystems PDF posters and templates.

DOWNLOAD

INSTRUCTIONS FOR PRINTING POSTERS TO YOUR PERFECTA® SERIES OR STICKERS AND CARDS TO YOUR MOTIVA® 400:

1. Open VariQuest® Design Center Software and select the Perfecta or Motiva module
2. Insert memory device (USB, SD card, etc.) containing Ecosystems files
3. Browse for PDFs using My PDFs icon
4. Select Output Size for Perfecta, or Material Type and Size for Motiva
5. Select Print

   *Use the Scan-to-Print feature on your Perfecta® STP to quickly enlarge any 8.5" x 11" document.

Step 1

Step 3

Step 5 (Perfecta)

Step 5 (Motiva)

We at VariQuest applaud and thank you for all you do as an educator, and we are delighted to make it our mission to support yours.

LESSON ONE

Immersion (2 Days)

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

Lesson Objective:

- Students will learn the difference between living and nonliving things, as well as what living things need to stay alive.

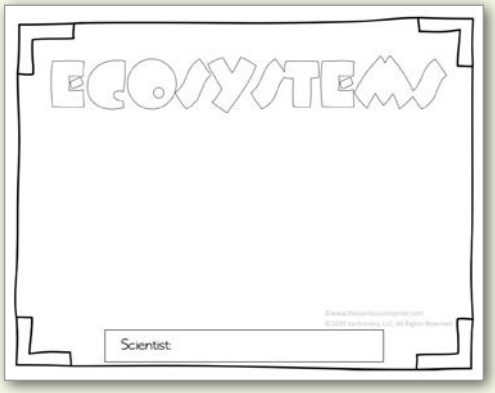
Materials:

- Various nonfiction and fiction titles that depict the following ecosystems: forest, mountain, desert, grasslands, tundra, freshwater and marine
- Lesson Resources
  - » Blank Ecosystem Anchor Chart posters for recording student findings
- Ecosystem Student Guide - Pages for use in Lesson:
  - » Immersion: Observations of Illustrations and Photographs
  - » Immersion: Presentation Notes (4 pages)

Desert, Forest, and Grasslands Posters

Lesson Preparation:

- Gather nonfiction and fiction titles depicting the seven ecosystems listed. Be sure that each ecosystem is represented with at least one fiction and one nonfiction title (however 3 to 5 titles is recommended for each if possible).
- Prepare the seven blank Ecosystem Anchor Charts into posters using the VariQuest® Perfecta® Series Poster Design System.
- Prepare individual copies of the Ecosystem Student Guide for all students by stapling the pages and creating books. (Be sure to look through all the unit materials before stapling the booklets. Some lessons may require more than one of the same page.)



Ecosystem Student Guide

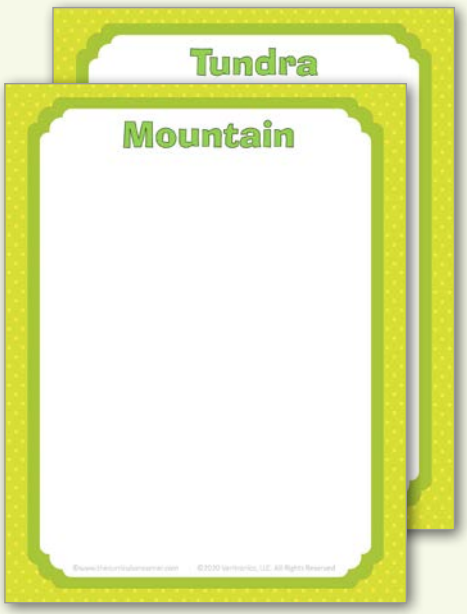
Lesson Procedure:

Day 1:

- Divide the students into seven groups.
- Pass out copies of the Ecosystem Student Guide booklets to students and have them write their names on the front covers.
- Provide each group with the stack of books depicting one of the seven ecosystems.

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

Mountain and Freshwater Posters



Tundra and Mountain Posters

- Explain to the students that they are to work as a group to make observations of the settings of the fiction stories and the photographs in the informational text. They may also read the story or look through the words of informational text to make observations of living and nonliving creatures, as well as their environment.
- Students will use the Immersion Observation page in their Ecosystem Student Guide booklets to record their group's findings.

Day 2:

- Gather the class and have each group spend a few minutes sharing their observations of the ecosystem they were assigned.
- As these short presentations are occurring, the teacher will write important findings and facts on each of the blank Ecosystem Anchor Charts while the rest of the class records the information on the Immersion Presentation Notes page of their Ecosystem Student Guide.
- *Optional - Using the VariQuest® Cold Laminator 2510, laminate the anchor chart posters, use dry erase markers to record student information, wipe clean and reuse as needed.*
- Discussion after each presentation, so that students can add even more information to their notes, is suggested.

Lesson Extension:

- The Ecosystem Student Guide contains a Glossary page to be included if the teacher feels it will help students to meet vocabulary objectives and add to student learning.
- The teacher can pre-assign the words that will need to be looked up and understood by the end of the unit or students can add words and definitions they learn independently.
- Note: You may choose to add more than one Glossary page depending on the number of words you wish for the students to learn.
- *Optional - Use the **VariQuest Motiva® 400 Specialty Printing System** to print words on cardstock and use as flashcards for additional reinforcement.*

LESSON 1

LESSON TWO

Living vs. Nonliving

Lesson Objective:

- Students will learn the difference between living and nonliving things, as well as what living things need to stay alive.

Materials:

- Literature Suggestion: *Living and Nonliving Things – A Compare and Contrast Book* by Kevin Kurtz
- Photograph of a live bear
- Teddy Graham crackers for each student
- Lesson Resources:
  - » Living and Nonliving Sort Cards (green cards)
  - » "Living Things Need" Checklist Cards (blue cards)
  - » Optional – Living and Nonliving Things Book Sort page
- Ecosystem Student Guide - Pages for use in Lesson 2:
  - » What Do You Notice?
  - » What do Living Things Need? (top); Living & Nonliving Walkabout (bottom)

Lesson Preparation:

- Find a picture of a live bear to display on a Smartboard or iPad(s).
- Purchase individual packages of Teddy Graham crackers for all your students (or plan to divide a large box of Teddy Grahams amongst the class).
- Prepare one set of green Living and Nonliving Sort Cards using the VariQuest® Perfecta® Series Poster Design System.
  - » *Consider using VariQuest 13"x19" Perfecta paper - A great size option for these cards.*
- Attach these cards to the walls and furniture around your classroom in places easy for students to find.
- Prepare a class set (one per student) of blue "Living Things Need" Checklist Cards using the Perfecta Printer.
- *Optional – Copy class set of Living and Nonliving Things Book Sort page.*

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

Checklist Cards

Living VS Nonliving Image Cards

Living & Nonliving Book Sort Page

Lesson Procedure:

- Ask students to think about the difference between their snack and the photograph of the live bear you have displayed. Tell them to record differences between the two "bears" on the "What Do You Notice?" page of their Ecosystem Student Guide.
- When students are finished, gather the class and discuss their thoughts on the differences between the living bear and their snack.
- Immediately following the discussion, pose the following question to the class: What do you think MOST living things need to survive?
- Through questioning, guide students to understand that most living things need air, water and an energy source (food, sunlight, etc). Students should take notes in the top section of their Ecosystem Student Guide page.
  - » Note: Be prepared to discuss the concept of underwater creatures needing air and what that might entail.
  - » If you want to go more in depth about what most living creatures need to survive you might also discuss the need to create new life and the need to grow and change. A second version of the "Living Things Need" Checklists have been created reflecting this further discussion. Use the one that suits your learning objective best.
- Next explain the Walkabout activity. Pass out one blue "Living Things Need" Card to each student. Their task is to walk around the classroom and look at each green Living and Nonliving Thing Sort Card. They are to use their checklist to help them determine if the objects are living or nonliving and record their answer on the bottom section of their Ecosystem Student Guide page.
- Once all students are finished with their Walkabout, discuss each card and whether the picture on the card is living or nonliving based on the checklist provided. Students correct the answers they have written in their Ecosystem Student Guide.
- Complete the lesson by reading the suggested literature title or another book that sums up the learning.

Lesson Extensions:

- Living and Nonliving Book Sort - Use the book *Living and Nonliving Things – A Compare and Contrast Book* by Kevin Kurtz at a literacy center for students. Their task is to find living and nonliving things within the pages of the book. Have them record their answers on the Living and Nonliving Things Book Sort page included within the lesson resources.
- *Optional - Use the T-Chart template, ID# TCH172 found in the **VariQuest® Design Center software**, print to poster size using the Perfecta and have students record their findings in a small group.*
- Living and Nonliving Things Sort – Place the green Living and Nonliving Things cards at a science center. Students sort them into the two categories.

What is an Ecosystem?

Lesson Objective:

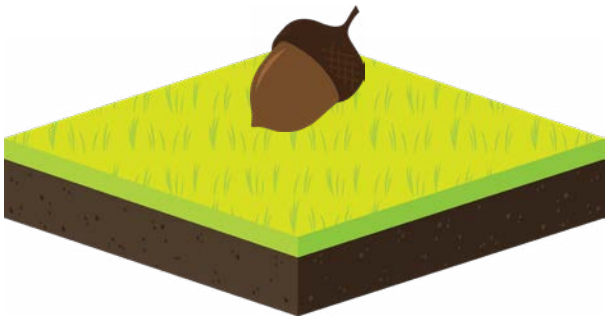
- Students will learn what an ecosystem is and how some of its components can be interdependent.

Materials:

- Literature: *Because of an Acorn* by Lola Schaefer and Adam Schaefer
- Oak leaf shapes for each student in the classroom
- Poster of leafless tree with branches
- Ecosystem Video Clip (Suggestion: https://www.youtube.com/watch?v=SNF8b7KKJ2I)
- Lesson Resources:
  - » "Because of an Acorn" Poster
- Ecosystem Student Guide - Page for use in Lesson 3:
  - » What is an ecosystem? Sketchnote Page

Lesson Preparation:

- Use the VariQuest® Cutout Maker 1800 to cut the oak leaf shape, ID# SEA116 in the VariQuest Design Center Software, for each student.
- Prepare the leafless tree to poster size using the VariQuest Perfecta® Series Poster Design System.
- Prepare the *Because of an Acorn* poster using the Perfecta Printer.
- Bookmark the suggested Ecosystem Video Clip (link above) on Smartboard or iPad(s).



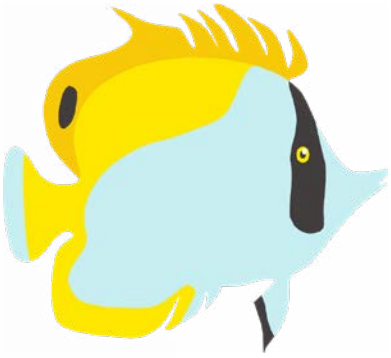
CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

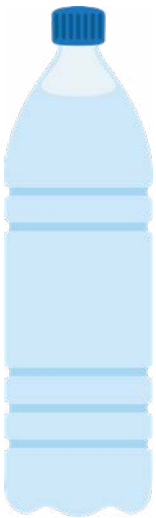
Because of an Acorn Poster

Leafless Tree Poster

Lesson Procedure:

- Display the anchor chart posters created in Lesson 1. Discuss the various ecosystems along with their obvious differences and similarities.
- Read *Because of an Acorn* and then pose the following questions for discussion:
  - » "What kind of a relationship do you see between the living and nonliving things?"
  - » "How do the living and nonliving things in this ecosystem rely on or interact with each other?"
  - » "Why and how is it important that living and nonliving things in an ecosystem work together? Use examples from the story."
- Direct students to pick one living thing from the book and think about how it affects another living or nonliving object in the book. Tell students to write their answer on one of the oak leaf shapes and hang their oak leaf on the tree poster. Discuss the answers immediately or save the discussion for later to review the importance of interdependence in an ecosystem.
- Show the suggested YouTube video as students take notes on the Sketchnote page of the Ecosystem Student Guide.
- Discuss how all ecosystems have similar relationships among the living and nonliving things and review the notion (or specific term) of interdependence.





Creating an Ecosystem

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

Lesson Objective:

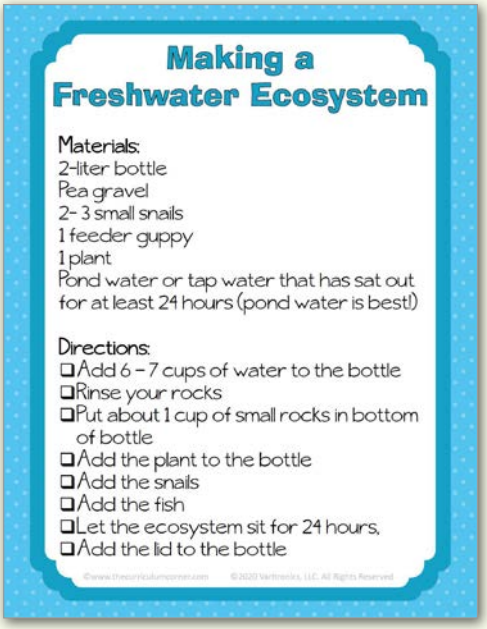
- Students will create small freshwater ecosystems so that they may learn more about living and nonliving things and their interdependence from observations of them.

Materials:

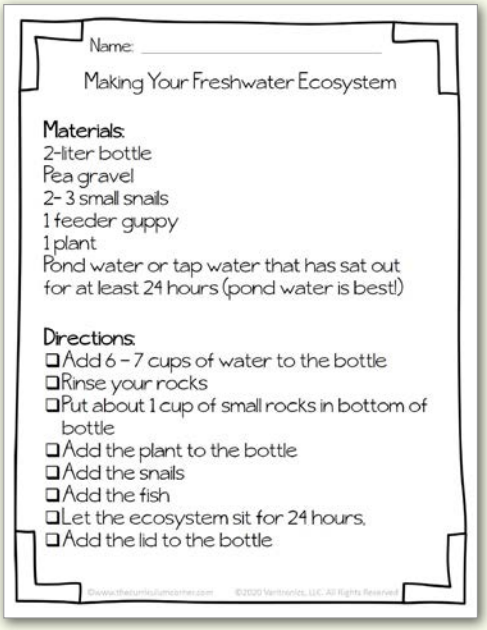
- Two-liter bottles (one per small group)
- Pea gravel/small rocks (1 cup per two-liter bottle)
- One aquatic plant per two-liter bottle (suggested: Anacharis Elodea)
- One feeder guppy per two-liter bottle
- 2 to 3 small snails per two-liter bottle
- 6 to 7 cups pond water per two-liter bottle (or tap water that has been sitting out for at least 24 hours)
- Lesson Resources:
  - » "Making a Freshwater Ecosystem" directions page
- Ecosystem Student Guide - Pages for use in Lesson 4:
  - » Creating an Ecosystem notes page
  - » Observing My Ecosystem page

Lesson Preparation:

- Purchase the items needed to create the freshwater ecosystems or make a request for donations to procure them. Divide the supplies and place them into baskets/bags. Place each set of supplies at different locations in the classroom for groups to work.
- Predetermine how many days of ecosystem observations you would like for the students to complete. Be sure you have added enough pages to the Ecosystem Student Guides to meet that requirement.
- Prepare the Making an Ecosystem anchor chart using the VariQuest® Perfecta® Series Poster Design System and copy the directions for each student using the black and white ecosystem handout provided.



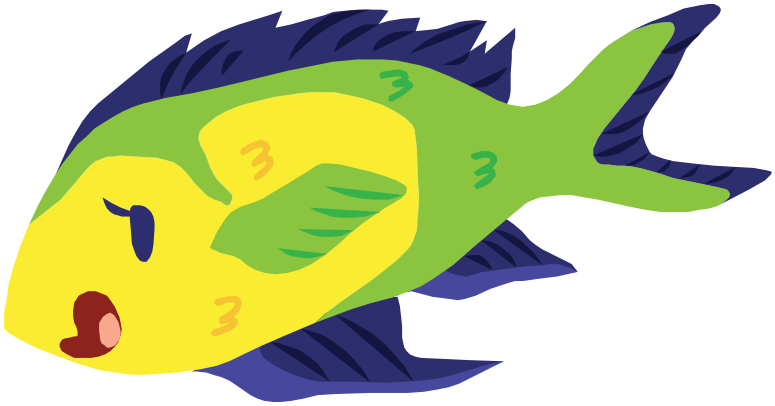
Making an Ecosystem Anchor Chart



Making an Ecosystem Handout

Lesson Procedure:

- Divide students into groups according to the amount of supplies that were purchased or donated.
- Groups follow the directions on the "Making a Freshwater Ecosystem" poster/printable to create the freshwater ecosystem they will be observing.
- As groups are assembling their ecosystems they are to record their thoughts, predictions and observations about the process on the "Creating an Ecosystem" Notes page in the Ecosystem Student Guide.
- Once the freshwater ecosystems are completed tell students how often they will need to record their observations (daily, every other day, weekly, etc).
- Before students begin observing, model exactly how you would like for them to record their observations on the "Observing My Ecosystem" page in the Ecosystem Student Guide. (Be sure to include how students might tell about how living and nonliving things in the ecosystem are interacting.)
  - » Suggestion – Use sentence starters to help students frame their thoughts, predictions and observations. Examples:
    - * The fish/snail is…
    - * The water in the ecosystem is…
    - * Because of … the plant is…
    - * Because of …I predict that the water will…
  - » Note: Be sure groups place their ecosystems in a location where observations can be made after the final day of observations gather students to discuss some of their findings.



LESSON 4

Understanding Food Chains

Lesson Objective:

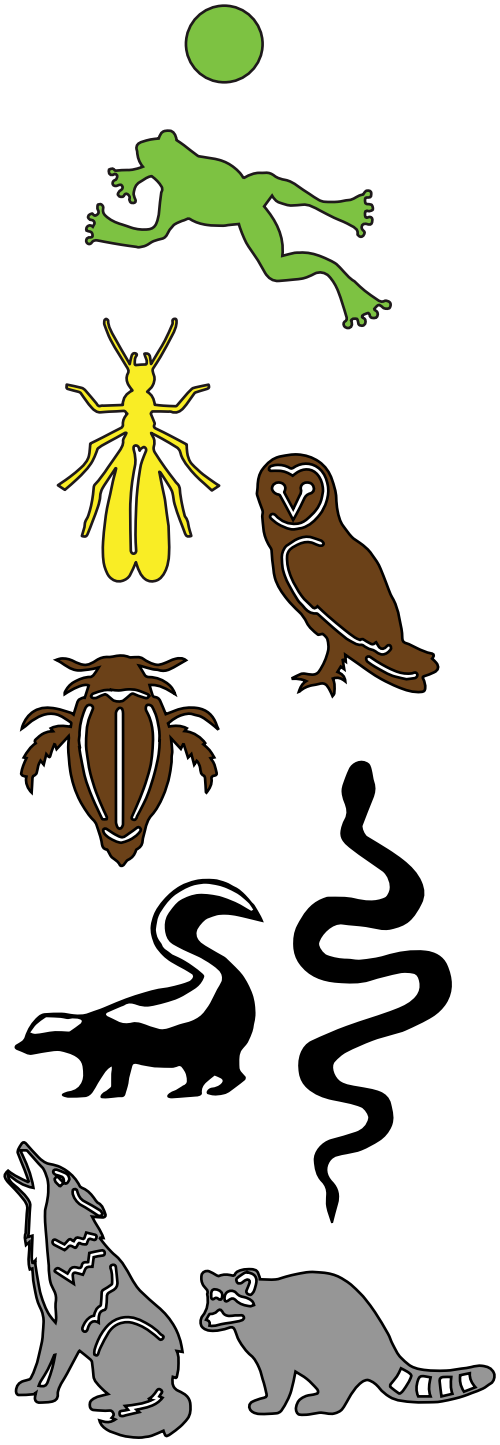
- Students will learn the functions of food chains and why they are vital to ecosystems.

Materials:

- Literature: *Pond Circle* by Betsy Franco
- Cutout shapes to represent the various living things in the story
- Ecosystem Student Guide - Pages for use in Lesson 5:
  - » Pond Circle Notes
  - » Lily Pad shape books (one per student)

Lesson Preparation:

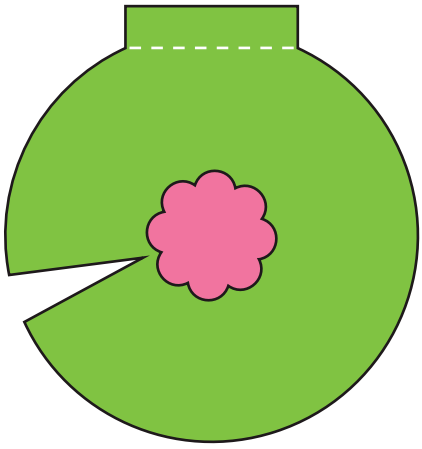
- Use the VariQuest® Cutout Maker 1800 to cut lily pad shape books and the shapes represented in *Pond Circle* on the various colored paper indicated. Be sure the books have at least ten pages for student writing.
  - » lily pad shape book (BKS165 & BKS166)
  - » green circle shape to represent algae (MTH306)
  - » yellow bug shape to represent nymph (ANI281)
  - » brown beetle shape (ANI215)
  - » green frog shape (SEA247)
  - » black snake shape (ANI1076)
  - » black skunk shape (ANI862)
  - » brown owl shape (ANI145)
  - » gray raccoon shape (ANI855)
  - » gray coyote shape (ANI352)
- Use the Cutout Maker to cut lily pad shape books (or print the lily pad shown on page 13) for each student in the classroom. Be sure the books have at least ten pages for student writing.

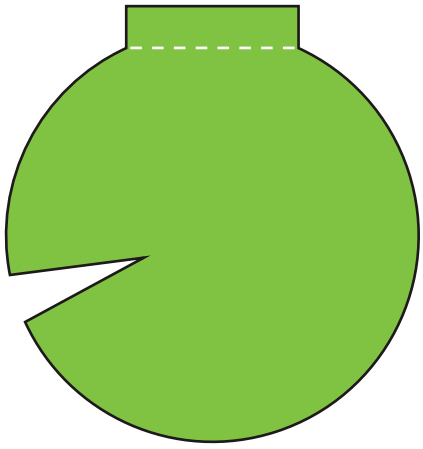


Lesson Procedure:

- Read aloud the book *Pond Circle* by Betsy Franco.
- Direct students to take notes about each living thing represented in the book on the Pond Circle Notes page of their Ecosystem Student Guide. (Nine boxes are provided on the notes page, one for each one of the living things in the book.) Tell students to think about each living thing represented and how they are interacting with regards to food/energy sources.

- After the read aloud pass the cutout shapes to nine different students. Have the class use their memory of the story and their notes to arrange the nine students into a circle to represent the food chain in the pond ecosystem. Discuss the importance of the food chain in a pond and its similar importance in other ecosystems. (Suggested: Frame some of your questioning using "If…then…" statements to get students thinking about how the creatures in the story rely on other creatures to survive. Ex – If all the fish in the pond disappeared, then how would that affect the pond ecosystem?)
- Finally, pass out the lily pad shape books. Students are to use their Pond Circle notes to retell story in their own words on the pages of the lily pad book. Note: This could be completed as a literacy or morning center if time doesn't allow for it during the science block.

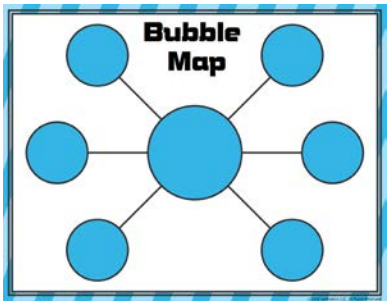




You will find the lily pad shape book with the other ecosystem PDF files for download on page 2 of this eBook.

Lesson Enrichment Idea:

- Suggested Higher Level Literature – *Horseshoe Crabs and Shorebirds: The Story of the Food Web* by Victoria Crenson.
- Have students read the book and make the shapes to represent the living things in the story. They can then create a presentation similar to the one in the activity above and teach the rest of the class about a different food chain.
- *Optional - To enhance student presentations, find Bubble Map, ID# TCH056 in the VariQuest Design Center Software and enlarge to poster size using the VariQuest® Perfecta® Series Poster Design System.*



LESSON 5

Focus on a Terrestrial Ecosystem
Forest

Lesson Objective:

- Students will learn the attributes of a forest ecosystem.

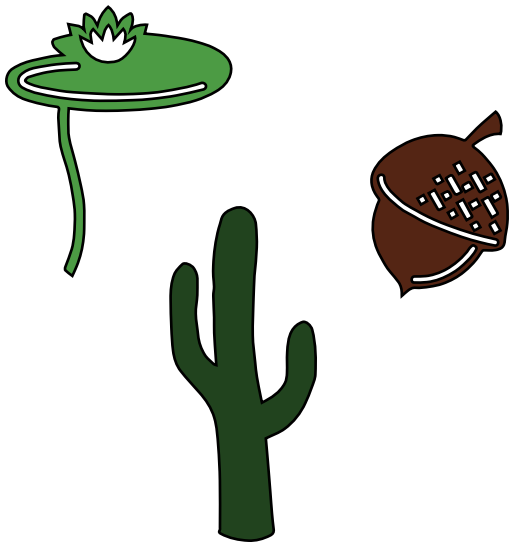
Materials:

- Suggested Literature: *The Home Builders* by Varsha Bajaj
- Forest Poster
- 0 to 40 shapes representing objects from various ecosystems
- Tape (or another sticky substance) to attach shapes to forest poster
- Ecosystem Student Guide - Pages for use in Lesson 6:
  - » Explore the Forest Ecosystem notes page

Lesson Preparation:

- Obtain a copy of the suggested literature or another title that will teach students about the forest ecosystem.
- Prepare the forest poster using the VariQuest® Perfecta® Series Poster Design System and template ID# SCI061 in the VariQuest Design Center Software.
- Cut out 30 to 40 different shapes from the VariQuest Cutout Maker 1800 to represent objects from various ecosystems.

Forest Poster (SCI061)



Lesson Procedure:

- Begin by activating schema and building some background with a discussion. Find out what students already know about forests. Record their ideas in some way that will be easy to access at the end of the lesson (technology or blank white anchor chart enlarged to poster size using the VariQuest Perfecta).
- Discuss the "Explore the Forest Ecosystem" notes page in the Ecosystem Student Guide and your expectations for what the students will write as you read. Note: Be sure to let the students know that not all categories on the notes page will necessarily be filled. Some may not apply or be addressed in the book.
- Read aloud the suggested (or chosen) literature as students record their learning on the notes page.
- When finished with the book give each student in the class one of the cutout shapes.
- Use the remaining shapes (the ones you did not pass out) first and discuss whether or not you would likely find each of the objects within a forest ecosystem. As you discuss each shape, place it on the forest poster if it would be a part of a forest ecosystem.
- Next, have individual students talk about their shapes. They need to tell what their shape is, if it would likely be found in a forest ecosystem and why. Be sure to encourage students to share as much information as they know about their object, including what ecosystem it may be found in, if not a forest.
- When finished have students refer to their notes page to talk about additional items that may also be part of a forest ecosystem.
- *Optional – Have students draw pictures of objects that were discussed that could be a part of a forest ecosystem and add them to the poster.*
- *Optional – Use the VariQuest® Motiva® 400 Specialty Printing System to create flashcards with pictures of objects and have students identify which ones belong in a forest ecosystem.*

Lesson Extensions:

- Have students work individually or in small groups to brainstorm lists of classroom books, or even movies they have seen, that have a forest ecosystem as the setting for the story.

LESSON 6

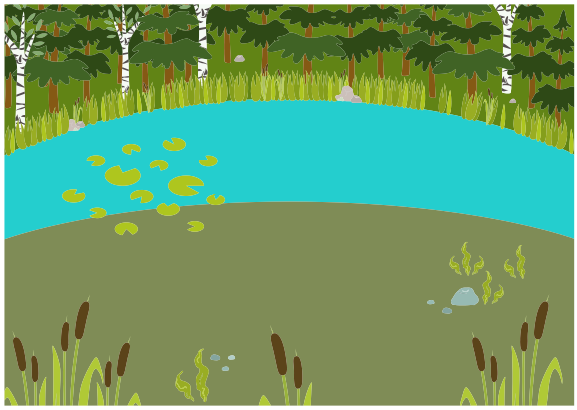
Focus on an Aquatic Ecosystem Freshwater

Lesson Objective:

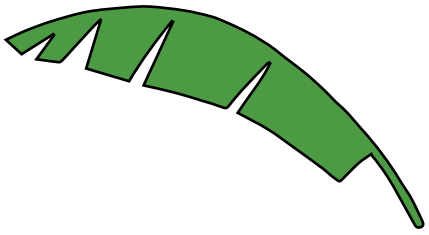
- Students will learn the attributes of a freshwater ecosystem.

Materials:

- Suggested Literature: *Over and Under the Pond* by Kate Messner
- Freshwater Poster
- 30 to 40 shapes representing objects from various ecosystems
- Tape (or another sticky substance) to attach shapes to freshwater poster
- Ecosystem Student Guide - Pages for use in Lesson 7:
  - » Explore the Freshwater Ecosystem notes page

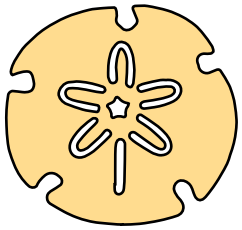


Freshwater Poster (SCI068)



Lesson Preparation:

- Obtain a copy of the suggested literature or another title that will teach students about the freshwater ecosystem.
- Prepare the lake poster using the VariQuest® Perfecta® Series Poster Design System and template ID# SCI068 in the VariQuest Design Center Software.
- Cut out 30 to 40 different shapes using the VariQuest Cutout Maker 1800 to represent objects from various ecosystems.

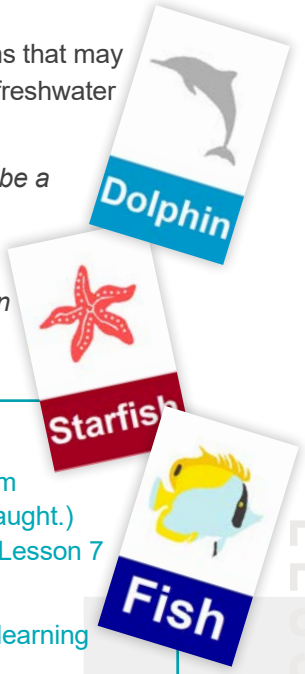


Lesson Procedure:

(Note – Lesson 7 mirrors the previous lesson on the forest ecosystem)

- Begin by activating schema and building some background with a discussion. Find out what students already know about freshwater ecosystems. Record their ideas in some way that will be easy to access at the end of the lesson (technology or blank white anchor chart).
- Discuss the "Explore the Freshwater Ecosystem" notes page in the Ecosystem Student Guide and your expectations for what the students will write as you read. Note: Be sure to let the students know that not all categories on the notes page will necessarily be filled. Some may not apply or be addressed in the book.
- Read aloud the suggested (or chosen) literature as students record their learning on the notes page.
- When finished with the book give each student in the class one of the cutout shapes.

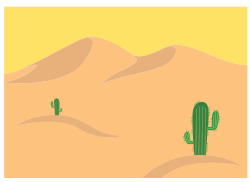
- Use the remaining shapes (the ones you did not pass out) first and discuss whether or not you would likely find each of the objects within a freshwater ecosystem. As you discuss each shape, place it on the freshwater poster if would be a part of a freshwater ecosystem.
- Next, have individual students talk about their shapes. They need to tell what their shape is, if it would likely be found in a freshwater ecosystem and why. Be sure to encourage students to share as much information as they know about their object, including what ecosystem it may be found in, if not freshwater.
- When finished have students refer to their notes page to talk about additional items that may also be part of a freshwater ecosystem. Revisit the students' original ideas about freshwater ecosystems to see what misconceptions they may have had.
- *Optional – Have students draw pictures of objects that were discussed that could be a part of a freshwater ecosystem and add them to the poster.*
- *Optional – Use the VariQuest® Motiva® 400 Specialty Printing System to create flashcards with pictures of objects and have students identify which ones belong in a freshwater ecosystem.*

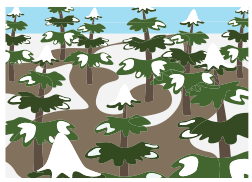


Lesson Extension:

Notes pages for five additional ecosystems have been included in the Ecosystem Student Guide. (As well as a blank page for additional ecosystems wish to be taught.) Teachers may choose to only add those pages that coincide with Lesson 6 and Lesson 7 or use the other notes pages in one of these ways:

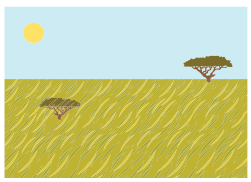
- Similar lessons could be carried out for other ecosystems required to meet learning objectives (using a book, poster and shape cutouts).
  - » *Note - Use the Perfecta Printer to enlarge the other 6 ecosystem templates in the VariQuest Design Center Software to poster size.*
- Small research groups could be formed to learn about the other ecosystems. The groups could share their findings with the rest of the class as students take notes on the additional pages provided.


Desert Poster (SCI062)


Taiga Poster (SCI065)


Rainforest Poster (SCI066)


Marine Poster (SCI064)


Grassland Poster (SCI063)


Tundra Poster (SCI067)

Ecosystem Assessment and Review

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

Lesson Objective:

- Students will show their knowledge of the characteristics of each of the ecosystems taught.

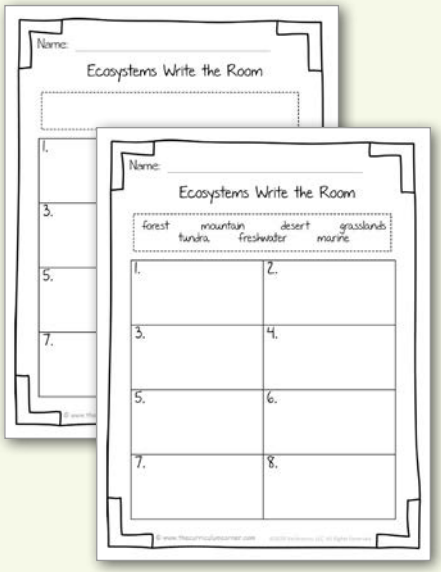
Materials:

- Green Write the Room cards
- Tape (or other sticky substance) to attach cards to locations in the classroom
- Recording pages for student answers (various choices provided depending on number of cards used for activity)
- Ecosystem Answer Key
- *Optional: Clipboards for students to use as they walk the room with their recording pages*

Write the Room Cards

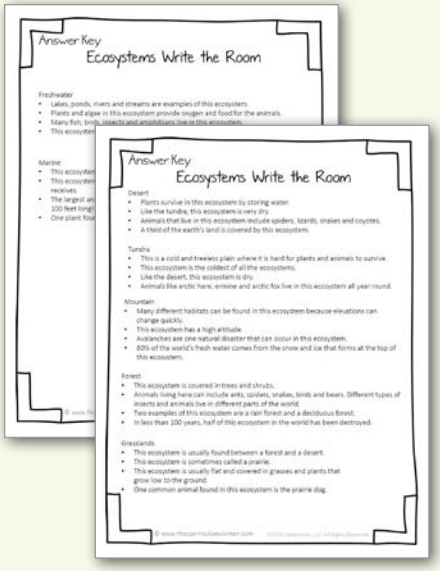
Lesson Preparation:

- Prepare green Write the Room cards (according to the ecosystems that were taught) using the VariQuest® Perfecta® Series Poster Design System.
  - » *Consider using VariQuest 13"x19" Perfecta paper - A great size option for these cards.*
- *Optional- Use the VariQuest Motiva® 400 Specialty Printing System and template ID# MTCH013 or MTCH081 in the VariQuest Design Center Software to customize a set of Write the Room Cards as 3" or 4" stickers.*
- Attach the cards to various surfaces around the classroom (walls, cubbies, filing cabinets, tables, etc).
- Copy a class set of the recording page that will best match the cards chosen.
- Print the answer key for grading or student self-check. (For students to self-check you may wish to print more)
- *Optional - Consider printing the answer keys to poster size using the Perfecta Printer and anchor it to your classroom wall.*

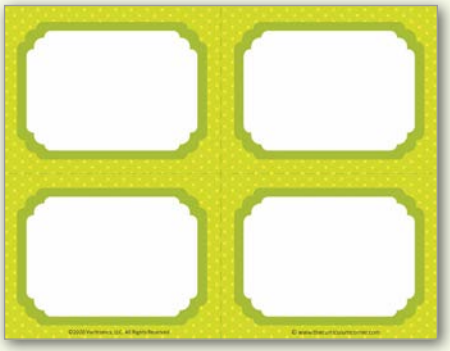


Write the Room Recording Pages

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON



Answer Keys



Blank Write the Room Cards

Lesson Procedure:

- Pass out student recording pages (and clipboards if used).
- Explain the directions for the activity. Students are to walk around the room, visit each card (according to the number of spots on their recording pages) and write the names of the ecosystems that match each clue provided.
- If this activity is used as an assessment of learning, students simply turn in their recording pages.
- If this activity is used as a review, have students self-check with answer keys OR have students check answers as each card is taken down and discussed as a class.

Lesson Extension:

- One page of blank green Write the Room cards has been provided. Print off one or more of these pages and let students write their own clues about various ecosystems to be used at a science center.
- *Optional- Use the Perfecta Printer to print the Write the Room cards to poster size and have students write in their clues, then discuss in a small group setting.*

LESSON 8

Sharing the Learning Celebration

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

Lesson Objective:

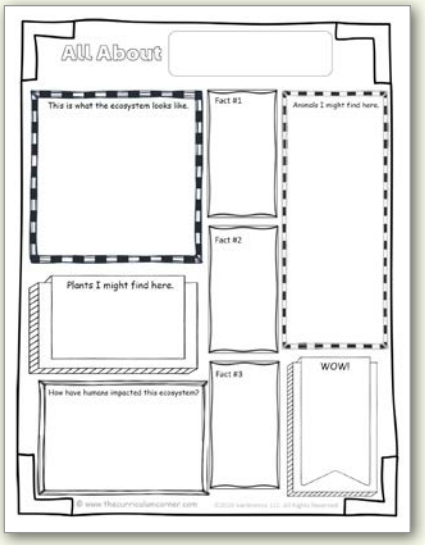
- Students will display their knowledge of ecosystems by sharing with others.

Materials:

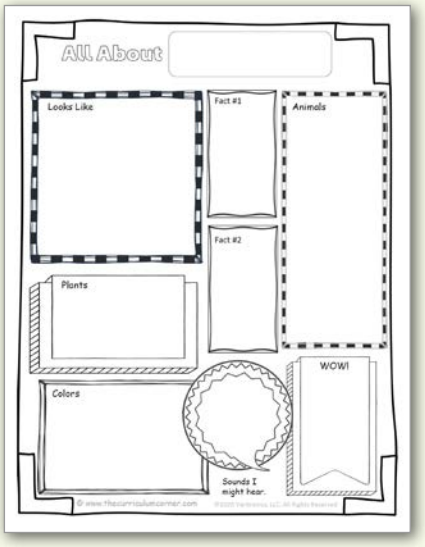
- Student Ecosystem Guides
- "All About" Posters (Four choices provided)
- Writing and coloring tools to be used on posters
- *Optional: Tablets or computers for further ecosystem research*

Lesson Preparation:

- Decide if students will work independently or in small groups to display their learning.
- Contact another classroom teacher in your building to arrange a time and place for your students to share what they have learned about ecosystems.
- Choose the "All About" poster template of choice for groups or individual students. (You may also consider providing students with the choice.)
- Prepare the "All About" posters using the VariQuest® Perfecta® Series Poster Design System.
- *Optional - Use the VariQuest 2510 Cold Laminator to laminate the completed posters for added durability.*

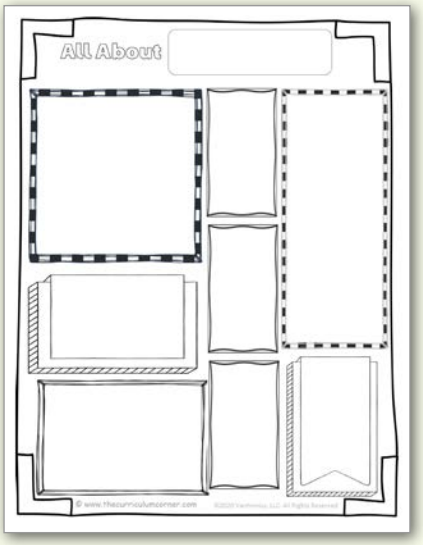


"All About" Poster Version 1

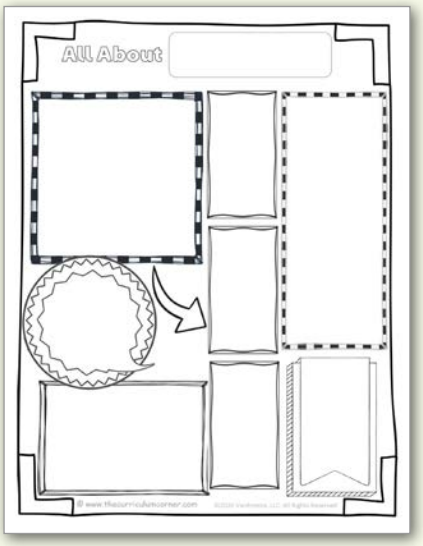


"All About" Poster Version 2

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON



"All About" Poster Version 3



"All About" Poster Version 4

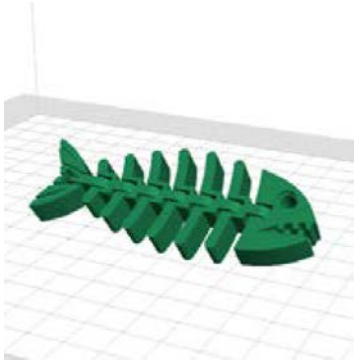
Lesson Procedure:

- Pass out the posters to students and explain the expectations for their completion as well as the fact that they will be shared with students in other classrooms.
- If students are working in small groups, divide them evenly into the number of ecosystems that were taught. If students are working independently give each student a poster.
- Students may need more than one day to complete their posters for presentation to others.

Once all posters are completed, visit another classroom (or more). If students completed individual posters it is suggested that they are paired with another student for a one-on-one sharing of their learning. If groups have been formed, then each group can present in front of the entire class.

Lesson Extensions:

- Set up an Ecosystem Fair in the classroom for other students and faculty to come visit. Students can create dioramas, find books or share other artifacts from each of the ecosystems.
- *Optional: Use the VariQuest® Trifecta® 800 3D Printer to print objects found in various ecosystems.*
  - » *Consider using clear filament and have students' paint their creations with acrylic paint.*



LESSON 9

Connecting Our Learning to the World Around Us

CLICK HERE TO DOWNLOAD ALL MATERIALS FOR THIS LESSON

Lesson Objective:

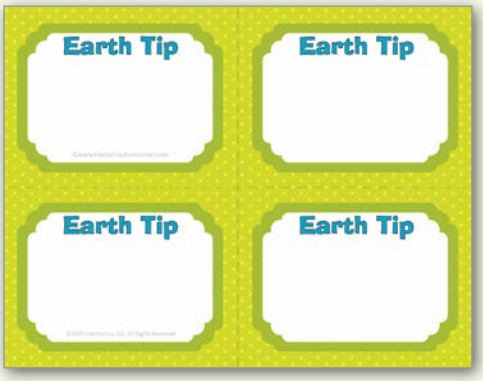
- Students will demonstrate their knowledge and understanding of the ways humans can affect the earth in positive or negative ways.

Materials:

- Suggested Literature:
  - » *What a Waste: Trash, Recycling, and Protecting our Planet* by Jess French
  - » *Not for Me, Please! I Choose to Act Green* by Maria Godsey
- Lesson Resources:
  - » Blank Anchor Chart – How Can We Help Our Planet?
  - » Earth Tip Reminder Cards
- Ecosystem Student Guide - Pages for use in Lesson 10:
  - » How Do We Impact the Environment?

Lesson Preparation:

- Obtain a copy of the suggested literature or another title that will teach students about the impact humans have on the planet.
- Prepare the blank anchor chart “How Can We Help Our Planet” to poster size using the VariQuest® Perfecta® Series Poster Design System.
- Prepare the Earth Tip Reminder Cards using the Perfecta Printer, or as flashcards using the VariQuest Motiva® 400 Specialty Printing System and template ID# MTCH013 or ID# MTCH081 in the Design Center Software, customized to read ‘Earth Tip.’
  - » *Consider using Motiva 3” or 4” Card Stock for your flashcards.*



Earth Tip Reminder Cards

How Can We Help Our Planet Poster

Lesson Procedure:

- Gather students and read aloud one of the suggested pieces of literature or another similar title. Facilitate a discussion about the literature and ways humans impact the environment.
- Students then work with partners or in small groups to brainstorm ways that humans impact the environment. They record their brainstorming on the Ecosystem Student Guide page "How do we impact the environment?" and place their ideas in one of two columns – positive or negative.
- Gather the class to record their ideas for positive change (or how to fix negative things) on the blank "How Can We Help Our Planet" anchor chart.
- As a class brainstorm five to seven places in the community that would benefit from Earth Tip Reminder Cards. (Ex: school building, local library, nearby mall, park, etc)
- Students then work in groups to create Earth Tip Reminder Cards for each place in the community.
- Once the Reminder Cards have been completed make a plan to take them into the community and either post as stickers, or hand out as cards.

LESSON 10

Ecosystems Unit of Study

Lesson 1 Immersion

1-LS1-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

Lesson 2 Living vs Nonliving

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

Lesson 3 What is an ecosystem?

3-LS2-1 Ecosystems: Interactions, Energy, and Dynamics

3-LS4-3 Biological Evolution: Unity and Diversity: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Lesson 4 Creating an Ecosystem

3-LS2-1 and **3-LS4-3** along with…

2-LS2-1 Ecosystems: Interactions, Energy, and Dynamics: Plan and conduct an investigation to determine if plants need sunlight and water to grow.

Lesson 5 Understanding Food Chains

5-PS3-1 Energy: Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.

5-LS2-1 Ecosystems: Interactions, Energy, and Dynamics – Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Lesson 6 Focus on a Terrestrial Ecosystem – Forest

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

Lesson 7 Focus on an Aquatic Ecosystem – Freshwater

2-LS2-2 Ecosystems: Interactions, Energy, and Dynamics

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

Lesson 8 Ecosystem Assessment/ Review

Lesson 9 Sharing the Learning

All About posters – standards covered will depend on grade level of students and resources provided. (See specifics below.)

Lesson 10 Connecting our Learning to the World Around Us

Again, standards covered will depend on grade level of students and resources provided.

Along with previous standards addressed in lesson 1 – 8, possibilities in lessons 9 and 10 include:

K-ESS2-2 Earth's Systems: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-1 Earth and human Activity: Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

K-ESS3-3 Earth and Human Activity: Communicate solutions that will reduce the impact of humans on the land, water, air and/or other living things in the local environment.

3-LS4-2 Biological Evolution: Unity and Diversity Use evidence to construct and explanation for how variations in the characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

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